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Ambient air pollution, climate change, and population health in China

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Year: 2011
Journal: Environment International. 42 (1): 19-Oct

Abstract:

As the largest developing country, China has been changing rapidly over the last three decades and its economic expansion is largely driven by the use of fossil fuels, which leads to a dramatic increase in emissions of both ambient air pollutants and greenhouse gases (GHGs). China is now facing the worst air pollution problem in the world, and is also the largest emitter of carbon dioxide. A number of epidemiological studies on air pollution and population health have been conducted in China, using time-series, case-crossover, cross-sectional, cohort, panel or intervention designs. The increased health risks observed among Chinese population are somewhat lower in magnitude, per amount of pollution, than the risks found in developed countries. However, the importance of these increased health risks is greater than that in North America or Europe, because the levels of air pollution in China are very high in general and Chinese population accounts for more than one fourth of the world's totals. Meanwhile, evidence is mounting that climate change has already affected human health directly and indirectly in China, including mortality from extreme weather events; changes in air and water quality; and changes in the ecology of infectious diseases. If China acts to reduce the combustion of fossil fuels and the resultant air pollution, it will reap not only the health benefits associated with improvement of air quality but also the reduced GHG emissions. Consideration of the health impact of air pollution and climate change can help the Chinese government move forward towards sustainable development with appropriate urgency.

Source: http://dx.doi.org/10.1016/j.envint.2011.03.003

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Extreme Weather Event, Temperature

Air Pollution: Dust, Interaction with Temperature, Ozone, Particulate Matter, Other Air Pollution

Air Pollution (other): SO2, NO2, NOx, CO, PAHs

Extreme Weather Event: Drought, Flooding, Hurricanes/Cyclones, Landslides, Other Extreme Event

Extreme Weather Event (other): blizzards, windstorms

Temperature: Extreme Cold, Extreme Heat

Geographic Feature:

resource focuses on specific type of geography

Ocean/Coastal, Tropical, Urban

Geographic Location: ☑

resource focuses on specific location

Non-United States

Non-United States: Asia

Asian Region/Country: China

Health Co-Benefit/Co–Harm (Adaption/Mitigation): ☑

specification of beneficial or harmful impacts to health resulting from efforts to reduce or cope with greenhouse gases

A focus of content

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Cancer, Cardiovascular Effect, Infectious Disease, Morbidity/Mortality, Respiratory Effect, Other Health Impact

Cardiovascular Effect: Other Cardiovascular Effect

Cardiovascular Disease (other): cardiovascular mortality

Infectious Disease: Foodborne/Waterborne Disease, Vectorborne Disease

Foodborne/Waterborne Disease: Schistosomiasis

Vectorborne Disease: Mosquito-borne Disease

Mosquito-borne Disease: Dengue, Malaria, Viral Encephalitis

Respiratory Effect: Lung Cancer, Upper Respiratory Allergy, Other Respiratory Effect

Respiratory Condition (other) : respiratory mortality

Other Health Impact: immune function

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Mitigation

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Elderly

Resource Type: ☑

format or standard characteristic of resource

Review

Timescale:

time period studied

Time Scale Unspecified